

REMARKS

Please reconsider the application in view of the above amendments and the following remarks. Applicant thanks the Examiner for carefully considering this application.

I. Claim to Priority and IDS Not Acknowledged

As a preliminary matter, the Applicants note that this application claims priority, pursuant to 35 U.S.C. §119(e), of U.S. Provisional Application No. 60/219,974, filed July 21, 2000. The Applicants note, however, that the Examiner did not check box 14 on PTO form 326, acknowledging the claim for domestic priority. The Applicants respectfully request that the Examiner acknowledge the claim at the next opportunity to do so. This matter was raised by the Applicants in the previous response. However, Applicants note that the Examiner did not comment on this matter in the current Office Action.

The Applicants also note that the Examiner did not acknowledge receipt of the Information Disclosure Statement filed on December 5, 2003. The Applicants respectfully request that the Examiner acknowledge receipt of the IDS at the next opportunity to do so.

II. Disposition of Claims

Claims 1-8 are pending in this application. Claims 1, 5, and 6 are independent. The remaining claims depend, directly or indirectly, from claims 1, 5, and 6.

III. Claim Amendments

Claims 2, 3, 7, and 8 have been canceled in this reply. Claim 1 has been amended to include operating the turbine-type mud motor at a high rotary speed to drill at greater than a selected rate of penetration. The selected rate of penetration would typically be determined by what is commercially acceptable for the particular application. Additionally, claim 1 now includes the limitations of claim 3, which has been canceled. This amendment is fully supported in paragraph [0017] of the specification and, thus, does not constitute new matter.

Claim 5 has been amended so that the turbine-type mud motor of claim 5 is selected from one of a bent housing turbine-type mud motor and a steerable turbine-type mud motor. Claim 6 has been amended to contain an asymmetric drill bit instead of a bi-center drill bit, as was previously recited in claim 8. Additionally, the turbine-type mud motor of claim 6 is selected from one of a bent housing turbine-type mud motor and a steerable turbine-type mud motor. The amendments to claims 5 and 6 are fully supported in the specification and, thus, do not constitute new matter.

IV. Background Discussion on the State of the Art

This section is intended as a general description of existing mud motor technology. It is presented for a clear understanding of the background and for ease of comparison with the claimed invention. Nothing in this section should be interpreted as a characterization of the present invention.

The Examiner has cited pages 142-145 of Petroleum Engineering authored by Gatlin. This reference is used to explain that the lateral forces referred to in U.S. Patent

No. 5,957,223 (“Doster”) result from an axial force (weight on bit). The Applicant respectfully disagrees. The discussion in Gatlin is aimed towards drill bits in general, not bi-center drill bits. As noted in the present invention (paragraph [0008]) and in Doster (column 2, lines 21-63), bi-center drill bits have unique stability problems resulting from having reaming cutters on one side, which results in imbalanced loading. Additionally, full gauge stabilizers cannot be used with a bi-center drill bit. These special stability challenges are not shared with regular drill bits.

While the force explanations in Gatlin are useful in illustrating how instability occurs while drilling with typical drill bits, Gatlin is silent on the effect of asymmetric cutting and an integral reaming section. Doster explains the forces related to the characteristics of a bi-center drill bit. Thus, the force explanations in Doster are significantly more relevant than Gatlin. The “State of the Art” section of Doster is more relevant with respect to bi-center drill bits. Accordingly, the teachings of the present invention should be considered in light of Doster and the specification of the present invention.

V. Rejection(s) under 35 U.S.C § 102

Claims 1-8 were rejected under 35 U.S.C. § 102 as anticipated by Doster. Claim 2, 3, 7, and 8 has been cancelled in this reply. Thus, the rejection to claim 2, 3, 7, and 8 is now moot. Claims 1, 5, and 6 have been amended in this reply to clarify the present invention. To the extent that this rejection may still apply to the amended claims, the rejection is respectfully traversed.

Method claims: Claims 1-5

As a preliminary note, the Examiner has rejected all of the method claims as anticipated by Doster. The rejection has been based on Doster disclosing a bi-center drill bit that may be connected to a mud motor. The Applicant respectfully notes that Doster only discloses an apparatus comprising a bi-center drill bit and a mud motor. The apparatus is not accompanied by any reference to a method of use. Thus, the methods disclosed in claims 1-5 are not anticipated by Doster.

Claim 1

Amended claim 1 recites operating a turbine-type mud motor selected from a bent housing turbine-type mud motor and a steerable turbine-type mud motor coupled to a bi-center drill bit. An axial force is applied to the bi-center drill bit such that the bi-center drill bit drills in a directionally stable manner. Additionally, the turbine-type motor is operated at a high rate of revolution so that the bi-center drill bit drills at a commercially acceptable rate of penetration. As is known in the art, the rate of penetration is closely related to the weight on bit and the rate of revolution. The recited method allows for a turbine-type mud motor to be used in a directionally stable manner while achieving a commercially acceptable rate of penetration.

Doster does not disclose a method for using a bi-center drill bit with a mud motor while applying an axial force selected to drill in a directionally stable manner. Doster merely discloses a bi-center drill bit that may be coupled to a mud motor. Doster aims to increase directional stability through the use of a specially designed bi-center drill bit.

With reference to Figure 2 in Doster, the bi-center drill bit is designed to increase directional stability by having enhanced gage pad area 116 disposed opposite of the

reaming blades. The reaming blades generate a radial force F2 (column 4, lines 36-62). The enhanced gage pad area 116 creates a reaction force F1 close in magnitude to F2. F1 and F2 combine to force the bi-center drill bit against the sidewall and prevent the tilting of the bi-center drill bit (column 4, lines 43-48). This characteristic is intended to result in a directionally stable bi-center drill bit. Doster is silent on the characteristics of the bi-center drill bit with respect to weight on bit and rate of revolution.

Moreover, the technology disclosed in Doster is based on anti-whirl drill bit technology (column 6, lines 33-41). The specific technology used by Doster is the enlargement of the gage area to resemble the bearing pads of anti-whirl drill bits. As is known in the art, anti-whirl drill bits, by nature of their resistance to side-cutting, are generally undesirable for use with directional drilling as recited in the present invention. Some level of side-cutting is required to build a desired angle in a wellbore. The resistance to side-cutting reduces the ability to build the desired angle in the wellbore. The bi-center drill bit in Doster, by having features of an anti-whirl drill bit, would share these characteristics. Additionally, Doster is silent on the use of steerable and bent housing mud motors. Thus, the method of claim 1 is not anticipated by Doster.

Claim 4

Claim 4 depends from claim 1, and is patentable for at least the same reasons. Claim 4 recites using an asymmetric drill bit instead of a bi-center drill bit. Doster is silent on coupling an asymmetric drill bit with a mud motor. Thus, claim 4 is not anticipated by Doster.

Claim 5

Amended claim 5 recites operating a turbine-type mud motor selected from a bent

housing turbine-type mud motor and a steerable turbine-type mud motor coupled to a bi-center drill bit. The bi-center bit is rotated at a high rate of revolution such that the bit drills in a directionally stable manner. As discussed with respect to claim 1, the bi-center drill bit in Doster is generally unsuitable for directional drilling. Additionally, Doster is silent on the use of steerable and bent housing mud motors. Thus, amended claim 5 is not anticipated by Doster.

Apparatus claim: Claim 6

Amended claim 6 recites a turbine-type mud motor selected from one of a bent housing turbine-type mud motor and a steerable turbine-type mud motor coupled to an asymmetric type drill bit. As discussed with respect to claim 1, the bi-center drill bit in Doster is generally unsuitable for directional drilling. Additionally, as discussed with respect to claim 4, Doster is silent on coupling an asymmetric drill bit to a mud motor. Thus, amended claim 6 is not anticipated by Doster.

In view of the above, Doster fails to show or suggest the present invention as recited in amended claims 1, 5, and 6. Thus, amended claims 1, 5, and 6 are patentable over Doster. Claim 4, which depends from claim 1, is allowable for at least the same reasons. Accordingly, withdrawal of this rejection is respectfully requested.


V. Conclusion

Applicant believes this reply is fully responsive to all outstanding issues and places this application in condition for allowance. If this belief is incorrect, or other issues arise, the Examiner is encouraged to contact the undersigned or his associates at the telephone number listed below. Please apply any charges not covered, or any credits, to Deposit Account 50-0591 (Reference Number 05516/079002).

Respectfully submitted,

Date: _____

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